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THE
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Poetry.

JUDGE GENTLY.

O, there has many a tear been shed,
And many a heart been broken,
For want of gentle hand stretched forth,
Or a word in kindness spoken.

Then oh! with brotherly regard;
Greet every son of sorrow;
So from each tone of love his heart
New hope, new strength shall borrow.

Nor turn—with cold and scornful eye
From him who hath offended;
But let the harshness of reproof
With kindest tones be blended.

The seeds of good are everywhere,
And, in the guiltiest bosom,
Sunn'd by the quickening rays of love,
Put forth their tender blossom.

While many a tempted soul hath been
To deeds of evil hardened—
Who felt that bitterest of griefs—
The first offence unpardoned!

Martyrs of Freedom.

"They never fall, who die in a good cause.
The block may soak their gore—their heads
May sodden in the sun—their limbs
Be strung on castle walls and city
Gates. And though after years elapse
And others share as dark a doom,
They but serve to augment
The deep and swelling thoughts
That overpower all others, and
Lead the world at last to
Freedom."

The Rainbow.

BY WILLIAM WORDSWORTH.

My heart leaps up when I behold
A rainbow in the sky;
So was it when my life began,
So is it now I am a man;
So let it be when I grow old,
Or let me die!
The child is father to the man;
And I could wish my soul to be
Bound each to each by natural piety.

Songs of Prosperity.

FROM THE CHINESE.

Where spades grow bright, and idle words grow dull;
Where jails are empty, and where barns are full;
Where church paths are with frequent feet outworn;
Law court yards weedy, silent and forlorn;
Where doctors foot it, and where farmers ride;
Where age abounds, and youth is multiplied;
Where these signs are, they clearly indicate
A happy people and well governed state.

The Poor.

Ope not your purse alone,
Its lucre to impart;
Of the two, 'tis better far
You freely ope your heart.
That which wrings the bosom most
Your money won't allay:
Sympathy's the sun, that turns
Its darkness into day.

IMPROVEMENT IN MACHINERY FOR BLOOMING IRON.

Fig. 1.

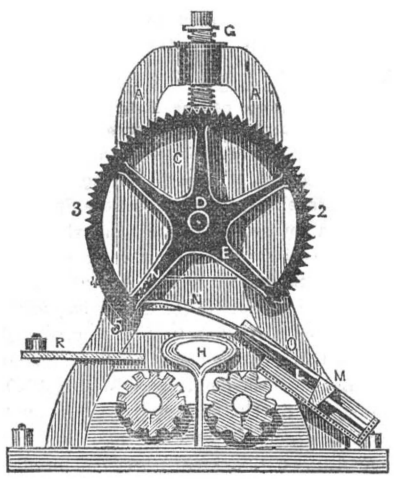
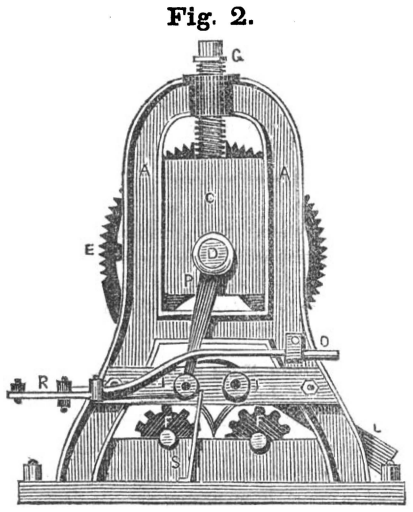
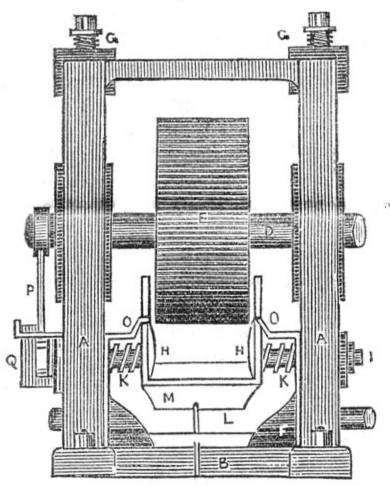


Fig. 2.



This invention is an improvement on machinery for compressing loops of puddled iron into blooms. A compresser is used in combination with two rollers, to produce what is termed a bloom. In this machinery there is an arrangement for keeping up the ends of the blooms square, and of a proper shape, —something very much required, as every iron manufacturer knows. Figure 1 is a side elevation. Figure 2 a sectional elevation; and figure 3 a front elevation. The same letters indicate like parts. A A is the cast iron frame, B, fi. 3, is the bed plate; C C are sliding blocks, forming bearings for the shaft, D; E is the compresser, secured on the shaft, D. The periphery of the compresser is eccentric to its centre of motion, to compress the ball or loup of iron between the periphery and the rollers, F F. The eccentricity of the compresser, E, commences at the point 1 of the periphery, when it begins to impinge upon the ball of iron submitted to its action, and it continues round three-fourths of the whole circumference to the point 5. From the point 1 to 2 the eccentricity is very abrupt. Here the periphery recedes from the centre quickly, outwards, to compress the ball and squeeze out the impurities therefrom; from 2 to 3 the eccentricity is more gradual, and still more from 3 to 4; but to 5 it very slightly inclines inwards. The space from the point 5 to 1 is left open to allow sufficient time to discharge the bloom, and for receiving into the machine another ball to be compressed. The periphery of E has indentations on it, for more effectually entering into the ball of iron, and they are deeper at the point where it commences to squeeze, and gradually grow finer, and towards the end it is nearly plain. The indentations on the periphery of E turn the ball round upon the lower rollers, F F, which are placed at such a distance from it as to suit the size of the ball and the size of the bloom to be made. The surface of the rollers are also fluted, and they are placed a short distance apart. The rollers are connected to the compresser by toothed gearing, so that they revolve in different directions. The periphery of the compresser, E, and those of the rollers revolve at about equal velocities. G G are set screws passing through the heads of the frames to adjust the distance between the compresser and roller. To square the ends of the bloom, the spring checks, H H, are placed on either side of the compresser, over the rollers, and to the back of the cheeks are secured studds, I I, bearing stiffly against the cheeks, and K K are helical springs to press the cheeks towards one another to keep up the ends of the blooms, when they are pressed outwards. The front faces of the cheeks are of a convex form, somewhat flattened in the middle.

Fig. 3.



L is a trough in front of the machine, placed in an inclined position. Within this trough is placed a plate, M, attached to the, end bars, N N, which terminate in a hooked shape, and they move in guides, O O. The ball is placed upon the plate, M, to be fed in and the said plate is retained back by a ballance weight below the bed plate of the machine. The loup or ball as it comes from the furnace, after being placed on M, remains until the compresser comes into the position shown above (when the compressing surface is out of action) when at that time two studds on the sides of the compresser, E, catch the hooked ends of the bars, N N, draw them upwards and deposit the loop on the rollers, F F; at the same time the arm, P, on the shaft, D, outside of the frame, A A, acts upon the bar, Q, (fig. 3), which is connected by a lever to the discharging plate, R, in such a manner that the bloom of iron is discharged at the back, when a fresh ball is fed in at front. S, fig. 2, is a spring which retains the discharging plate in position during the operation of compression (shingling) The power applied here is that of a revolving lever,—the eccentric principle of pressure, embraced in Dick's Press. The invention is American, patented by A. V. Newton, Esq., in England.

Mothers.

"What is wanting," said Napoleon, one day, to Madame Campan, "in order that the youth of France be well educated?" "Good mothers," was the reply. The Emperor was most forcibly struck with this answer.—"Here," said he, "is a system in one word."

Internal Improvements.

An Internal Improvement Convention is to be held in Greenville, Tenn. on the 10th Sept. to move in the matter of securing a charter for the East Tennessee and Virginia Railroad, to secure a subscription of stock by the State, to improve the rivers of East Tennessee.

RAILROAD NEWS.

Railroad Fare for the Fair Week.

The Syracuse and Oswego Railroad Co. advertise to carry visitors to Syracuse, during the week of the State Fair as follows:

From Oswego to Syracuse and back,			$1,00
From Fulton	"	"	0,75
From Lamson's	"	"	0,50
From Baldinsville	"	"	0,38

The cars will leave Oswego for Syracuse at 6 and 10 A. M. and 4 P. M.; returning, will leave Syracuse at a quarter to 8 A. M., and a quarter to 6 and 7 P. M.

The receipts of the Fulton Ferry New York, are estimated at nine hundred and twelve thousand five hundred dollars per annum!

The railway depot of the Boston and Albany Railroad at Greenbush, is one of the largest in the country, being 800 feet in length, 100 in width, and covering two acres. It cost $140,000.

Indianna Rail Roads.

The road from Edingburg to Shelbyville, is completed, and the trains are now passing regularly on it. A continuation of this road to Knightstown is graded. The iron is all contracted for, and two hundred tons of it is ready for delivery. Fifteen miles will be completed the ensuing fall, and the company, after finishing the whole road, will have a surplus capital on hand of fifteen thousand dollars, not including the iron, which has been purchased on a credit of ten years.

The Pennsylvania Coal Trade.

The "Pottsville Emporium" complains in this manner about the coal business:

"Another week has passed, and yet, unfortunately, we have no change to note in the condition of the Coal Trade—at least no favorable change. Buyers continue exceedingly chary, and prices range below remunerating rates; yet we are happy to say that most of our operators seem determined to do nothing rather than dispose of their Coal at too great sacrifice. It would seem almost impossible that the dealers generally in our Atlantic cities, should be so blind to the true state of things, and to their own interests, as not to perceive that the present offers a most favorable opportunity for them to lay in their fall and winter supplies. With this view of the subject we are encouraged to hope that with September, business will open anew, and continue through the remainder of the season, affording our people some remuneration for the toil, perplexity and sacrifices, which they have encountered up to the present time.

Another source of confidence for the future is to be found in the fact that very many of our people appear suddenly to have awakened to the only probable means for the ultimate salvation of the staple trade of Schuylkill county—that is to say, a direct communication with New York by means of a Railway. This is beyond all doubt feasible, and the spirit now evinced by those most interested."

[So say we. It is indeed singular that the price of coal in this city should average about one dollar per ton more than it did at this time last year, and the reason assigned "a scarcity of coal." There must be something more than this which causes this rise in the price. We find no fault with prices, to award a fair remuneration to operatives, shippers, and dealers, but surely with the mining districts of Pennsylvania so near to our city, means may be devised, or plans carried out, to bring the price of a ton of coal far below $5,50 or $6, to our working people. We go for the short cut by Railroad.

One dollar bills of the Eagle Bank, Bristol, R. I., altered to TENS, are in circulation—well done, and likely to deceive.

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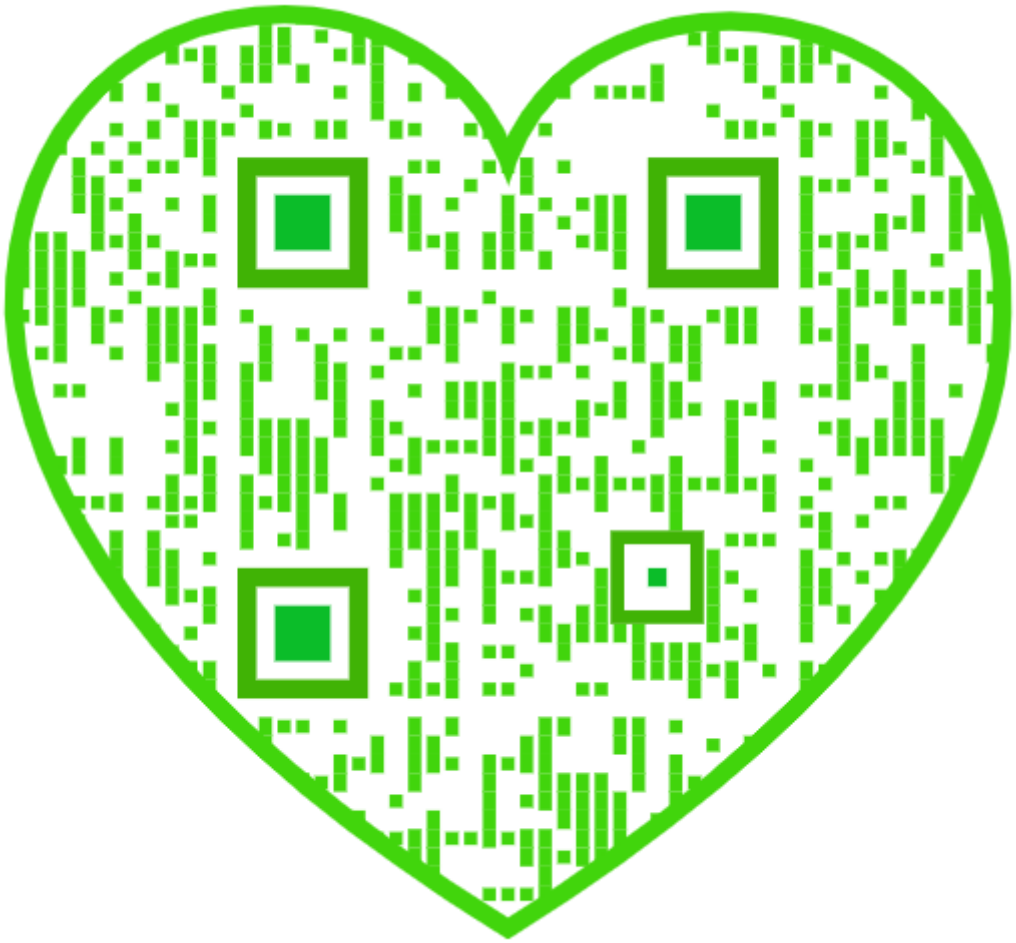

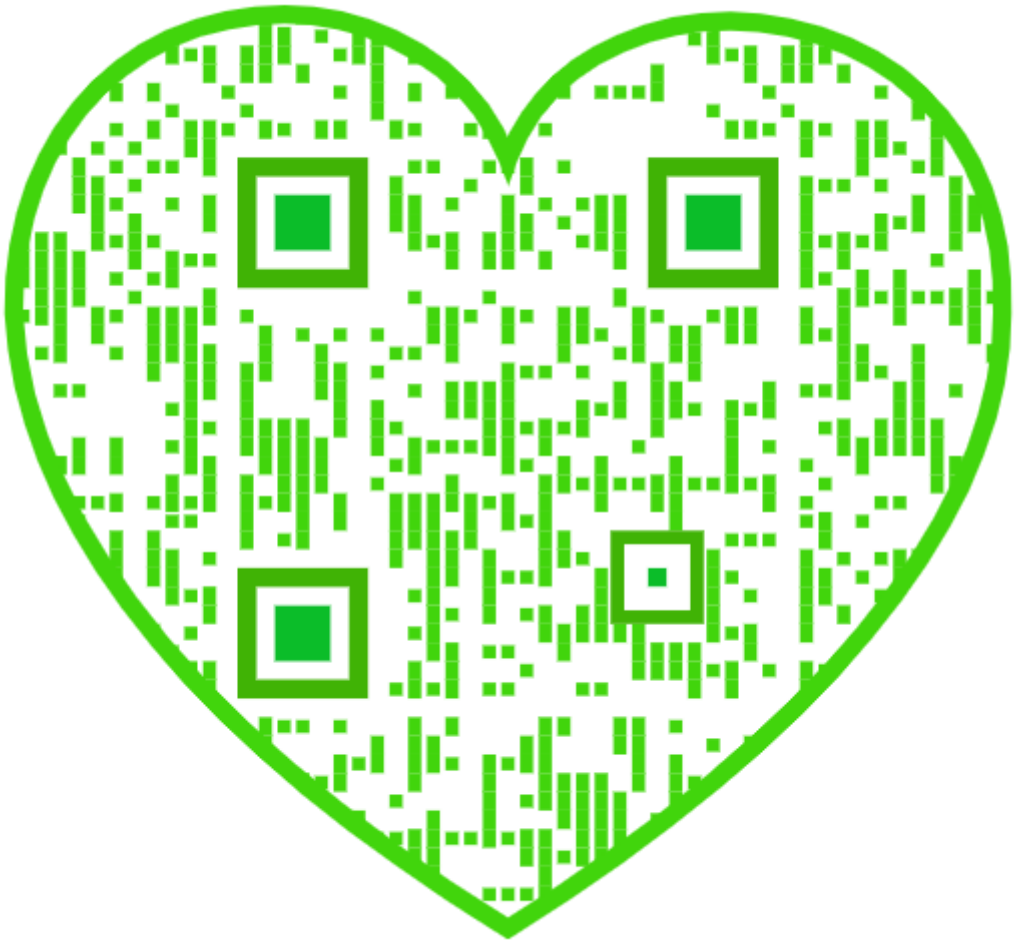

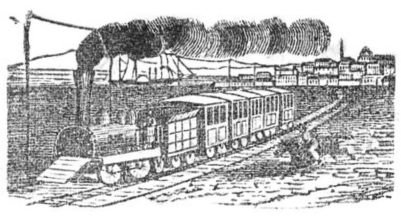

Whortleberry.

The Vermont Chronicle remarks that the swamp whortleberry is capable of successful introduction into garden culture. A gentleman in Wyane county, Michigan, has a little whortleberry tree, planted from a marsh ten years ago. It is about ten feet high, and about an inch and a half in diameter at the root. It stands in a rich sandy upland soil. The fruit is improved in size, and of equal flavor of that produced in the swamps. The yield is said to be more abundant and more certain. The tree is watered daily in very dry weather, and perhaps might do well without it.

Coal on the Isthmus.

Mr. W. Ridley of this city, who was employed to explore the Isthmus of Panama for the projected Railroad, states that he found bituminous coal of excellent quality, and in the greatest abundance, upon a peninsula of the Bay of Chiriqui, which lies some distance above the proposed termination, on the Atlantic side of the projected Railroad. The vicinity, moreover, seem to abound in the richest production of nature, vegetable, animal, and mineral, and according to Mr. R it presents a rich, and as yet, an entirely unattempted field of adventurous enterprise.

Force of Law.

Throughout the Sandwich Islands, such is now the force of law and moral sentiment, beginning with this copy of the decalogue, that where robbery and murder a few years ago were practised as trades, and were events of every day occurence, life and property are now safer than under any long established government that can be named. It is almost too great a tax on the traveller's credulity to ask him to believe that a people now so remarkably peaceable and gentle, among whom the safety of human life and property is unparalleled any where on the face of the earth, that less than one generation back, this very people were a savage, infanticide, idolatrous race.

Tailors' Strike.

The tailors of Boston have been out some time on a strike for an advancement of wages —a returning to old prices. We do not know the merits of the point in dispute, and we are rather opposed to strikes. There is one thing, however, we must say, we are in favor of honest industry receiving its due reward, and we know that the tailors of Boston and other cities in our country, do not receive enough of pay for their labor. "The laborer is worthy of his hire." The tailors in this city and Brooklyn sympathise with their Boston brethren.

The First Steamboat on the Mississippi.

The first steamboat that entered the Mississippi was the Enterprise. This was in 1815, it was only about seventy tons burthen. She took 28 days to go from New Orleans to Cincinnatti. The price of passage was $130, the passage now averages 5 days. The Enterprise had a single wheel placed in the stern. She was a great wonder then.

Absconding Railroad Contractors.

The Springfield Republican says: Two subcontractors on the section of the New London Willimantic and Palmer Railroad, below Stafford Springs, absconded, last week carrying with them a large amount of money which they had just received and which was due to laborers store-keepers and others, to whom they were indebted in the vicinity. Great excitement exists on account of the affair and the work on the section has been suspended, and a large portion of the Irish have left. One firm in Stafford are losers, it is reported, to the amount of 500 or $600 by the absconding parties, and have been obliged to suspend payment on account thereof.

[These fellows should be hunted down like jackalls.

Calabar.

The following particulars in relation to the race of negroes on the coast of Africa, known as the Calabers, are communicated to the Boston Journal by a missionary who spent five years on the Calaber river:

"The mission house up the Calaber river is 100 miles north of the Island of Fernando Po. This river is deep, and navigable for any sized vessel all the year, and is three-fourths of a mile wide, and eight fathoms to this station, and good water far above, and *is not* a branch of the Niger; but there is a channel some distance above, through which the surplus waters in an overflow find their way into the Niger, but most of the year the channel is dry. The iron house of the Chief or King at the station, was from England. Many houses of the chiefs are as well furnished as gentlemen's houses in America. The slave trade cannot be abolished by the present war system. Colonization and religious instruction is the true method. The common people on the coast are slaves. The grave of Lander is on Fernando Po, but is unmarked by a stone!"

The American Flag at Frankfort.

On the 25th of July, the flag of the United States was displayed from the balcony of the American Ambassador's house at Frankfort, Germany, (Mr. Donelson,) with the staff wrapped in crape, in mourning for the death of the Ex-President. The citizens did not at first know the meaning of this, and often passed, wondering what it could be. Some to whom it was explained, thought the custom of thus honoring the memory of a deceased ruler, very beautiful. Before night the circumstance was generally known in the town, and the people flocked to see the American flag, the first time most of them had probably ever seen it. Some of the younger part of the population gave it three hearty cheers

A Plank Road Between New York and Philadelphia.

Plank roads are coming into general use in all parts of the United States. A plank road from New York to Philadelphia, one would think, ought to pay it judiciously located. We understand that such a road would not conflict with any existing charters. A plank road can be built for $2,000 per mile. One advantage of such roads is, every farmer can use them with his own vehicle of conveyance. They will likewise, if constructed in a more costly manner, admit of being travelled over at a speed not not less than fifteen miles per hour, with proper relays of horses

Long Speeches.

The London Despatch, in alluding to the *bunkum* speeches made in Parliament, says: "Oh, seldom-speaking Cromwell! whose vocation was by no means talk, but who made Europe tremble, Ireland orderly, and England great—how need we wonder that a true worker should seek to get rid of chattering Parliamentary magpies, and pray the 'Lord to deliver him from Sir Henry Vane!' O, silent Washington, who could conquer the mighty, and found the greatest empire in the world, but whom a D'Israeli could confound in utterance! Oh, taciturn Brutus, who could even make Rome illustrious, and deleted Carthage from the world's map, but could not outspeak even the rawest of reporters! Have we not 'fallen on evil days and evil *tongues?*"

The Expedition in Search of Sir John Franklin.

Sir John Simpson has returned to Montreal from his annual tour of inspection through the Hudson's Bay Territories and Northwestern settlements of this Continent. We learn with regret from him that no clue had been obtained to the whereabouts, or the fate of Sir John Franklin and his gallant companions. Sir John Richardson indeed, is on his way back from the frozen regions, and may be expected in Montreal early in September His exploring party will, however, continue their search under the orders of Dr. Rae, of the Hudson's Bay Company, Sir John's second in command, throughout the summer.

He who forgets the fountain from whence he drank, and the tree under whose shade he gambolled in the days of his youth, is a stranger to the sweetest impressions of the human heart.

Curious Case of Surgery.

Some time ago a little child in Boston was playing with two small bivalve shells, when one of them disappeared and could not be found. After several weeks there was an appearance of something growing in the child's mouth, in the roof of it. The child was carried to Dr. Clark, the City Physician, who pronounced it a case of the enlargement of some bone, the anatomical name of which is too hard for us, but we will call it one of the rafters of the mouth. Subsequently Dr. Warren was consulted, who confirmed Dr. Clark's opinion, and proposed to operate to reduce the size of the enlarged bone. On cutting around the protuberance, the before-mentioned shell fell out.

Free Passage of the Brig Eureka through the St. Lawrence.

Permission has been obtained from the British Government, at London, for the brig Eureka of Cleveland, to pass down the St. Lawrence on a voyage to California, and she is advertised to sail for San Francisco on or about the 20th of September next. A gentleman at Cleveland, interested in the enterprise, writes under date of August 9, to a commercial house in Oswego, that he has the "documents from London, England, dated May 9, 1849, granting the Eureka leave to pass out through the St. Lawrence into the Atlantic—and she is now fitting out, and will pass down through your lake about the 1st of October."

Determination of the Longitude of Cambridge Observatory from Liverpool.

We noticed last week that some time ago, an arrangement was in progress, by which the difference of the meridians of Cambridge and Liverpool might be ascertained with great precision, by transporting in each of the Cunard steamers to and from this port a large number of chronometers which should be carefully compared by Messrs. Bond and Hartnup, the Directors of the Observatories at the two places. We understand that in pursuance of this arrangement, the first portion of the chronometers, forty-eight in number were received here by the Hibernia, and have been deposited at the Observatory without accident.

Mean Revenge.

At Copp's Hill burying ground, Mass., there is a grave, on the stone of which is the following inscription:

"Here lies buried, in a stone grave, ten feet deep, Captain Daniel Malcom, merchant, who departed this life Oct. 23d, 1769, aged 44; A true Son of Liberty, a Friend to the Public and an Enemy to Oppression, and one of the foremost in opposing the Revenue Acts in America."

Capt. Malcom had rendered himself extremely obnoxious to the British troops, and a short time after his death a file of soldiers was drawn up and discharged a volley of musketry at his grave stone. The marks of the balls are distinctly visible at the present day.

A Humorist.

The Duke of Montague was a great humorist. Among other original modes in which he contrived to minister to his own amusement, he had a defective looking glass suspended in his drawing room; so that all the noble guests who chanced to dine at Montague House, were induced, on passing the treacherous mirror, to adjust their wigs awry. In that day a full-dressed wig was as essential as a full-dressed coat; and his grace's dinner table commonly presented an assemblage of noble lords with their perukes dragged down into the right eye, each wondering at his neighbour's disorderly appeaance, and congratulating himself that in setting his own wig in the drawing room, he had escaped from the absurdity of disfiguring the rest of the company.

Indicted for Murder.

We learn that the grand jury of Saratoga county have found a bill of indictment for murder against John Tallmadge, the man who placed obstructions on the track of the Rensselaer and Saratoga railway, last spring, by which means the engine was thrown from the track, and Mr. W. L. Dodge, the engineer, so much injured that he died in a few days after.

Let no man doubt his abilities, without a trial of them.

Opinions of the Press.

SCIENTIFIC AMERICAN.—We call attention with pleasure and confidence to the subjoined prospectus of one of the best scientific papers in the United States. Conducted as it is by men of science and mechanical skill, and abounding with engravings, many of which are doubtless furnished by the owners of the patents they describe, the paper cannot fail to possess interest to those who think, but the lovers of long yarns and Lippard stories would not prize the American, any more than a lovesick dandy would prize the company of men of sense.—*Gazzette Zanisville Ohio.*

Our numerous readers would do well to read the Prospectus of the next volume of the Scientific American.

We consider this as one of our most interesting and valuable exchanges, and the public are forever indebted to the editors, Messrs. Munn and Co. for their labors, and the able manner in which its columns have been conducted within the last four years. There is no man who desires to keep pace with the intelligence of the present day should be without it—and were we a Carpenter, or worker in wood, we would as soon think of dispensing with our Square or Saw, as that of this instructive paper.

Any one wishing to see the 'Scientific American' can do so, by calling at this office. —*Free Press Legonier, Pa.*

[Gentlemen take to yourselves a large share of our gratitude: Eds. Sci. Am.]

Too Young to Marry.

American women marry too early, and in consequence become care-worn in appearance and broken in health before reaching the meridian of life. None should marry under 21, and we would advise all to wait until 25. Dr. Johnson, of the Medico-Chirurgical Review, tells us, that "for every month a woman spends in the married state between 17 and 21 years, a year will be taken from the duration of her beauty and personal attractions."

Old idea the above is, except in relation to the American women marry earlier than those of other countries. There is some proof wanting to settle the point.

Contagious Diseases.

There exists in nature, says Dr. Cox, a remarkable and admirable, in fact a necessary law. "It is that a person once affected by them is, with rare and peculiar exceptions, protected ever and ever against their attacks. If this limitation of contagious diseases did not exist, a short time would suffice to depopulate the earth," "there would not remain on the earth two men to discuss the theory of contagion." It is also to be remarked that contagious diseases there never has been known, nor, from their nature, can there be known such a thing as a relapse. They pass through certain stages and have a certain and well understood "resolution," as it is termed, and they never relapse from one of these stages to an earlier.

Now the cholera is well known to be unlimited as to the number of times it may affect the system, and those who suffer from it are probably more subject to relapse before perfect convalescence than if they were afflicted by any other maladv. The dilemma seems unavoidable then, either that Providence has permitted a disease to visit the earth unlimited by any law which would prevent the certain extermination of the human race, or that the cholera is not contagious. The former supposition is an absurdity. while the latter is equally accordant with reason and experience.

The Detroit papers speak very highly of Mr. Jones, the sculptor, who has lately finished two busts in the "city of straits;" one of Lewis, the other of Bishop Closky, both of which are said to be excellent likenesses, and as works of art, excel anything the editor of the Bulletin has seen.

The Canadian schooner Sophia, says the Cleveland True Democrat, is making her arrangements to sail in the fall direct from Chicago to Liverpool, with a cargo of beef. In the spring she will return with a cargo of St. Ubes salt for a Chicago house.

The late news from Europe is cheering to the cause of Hungary.

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Formation and Reduction of the Precious Metals.

Primary rocks, composed of quartz and felspar, with a grey base, approaching to the character of porphyry, saturated with decomposed felspar, containing an excess of potash, with a small proportion of silicia in solution, will, by time, produce a metallic efflorescence on the surface, and also the crystals in fissures and still more beautiful crystals in vacuities within the rocks. Gold and silver, and other metals least subject to oxidation, are commonly seen in such a state; so identical is the general appearance and the action of this metallic growth to that observed on the negative plate of a battery immersed in a metallic solution, as to render the analogy complete. The gold obtained from the workings at the foot of auriferous mountains, is generally produced in the same manner—that is, not in veins, but as a superficial efflorescence in the oxodiated part of the chrystaline mass.

The metals, during the act of their new formation, are again subject to become alloyed or mineralised, by other elements, according to their respective degrees of affinity and local circumstances. This process of perpetual change in the mineral kingdom (whilst in a state of saturation within the crystalline film of our globe under the sedimentary rocks) is as constant as the action of the sap in the growth of vegetation—both are in a state of activity. The surface of the auriferous granitics of South America and the Isthmus of Panama, especially those varieties subject to decompose in spherical oxfoliation, show this effect in a very remarkable manner. In depth we find the uniform crystalline structure, which, by fine grinding and washing, produce but a mere trace, or a yellow tinge: as we ascend, the crystalline aggregation passes, by an almost imperceptible gradations into a kind of globular structure, like a coarse conglomorate; the respective nuclei of each centre of attraction becomes denser and harder than the parent rock by the concentration of the surrounding silica, like the formation of flint in chalk. Each nuclei is enveloped by a series of concentric envelopes, which enclose as they approach towards the surface of the rock an efflorescence of ferruginous mineral, containing gold in minute crystals, and in grains. These grey compact silicious centres are called by the native gold washers in South America the "madres," or mother of the gold, as without these rounded nodules they seldom find sufficient gold in the debris to make it worthy of the labor of washing. After these oxodiated crusts are wiped or washed away from the foot, or from the ravines of such mountains the gold washers must remove to other localities, or wait a few years until this slow process of Nature supplies them with a new crop, as they know to their cost that it would be useless to penetrate into the hard rock in search of the metal, as it must have a surface vacuity or a fissure for its formation. Therefore there is nothing extraordinary in the effervescence of metals to those who studied natural phenomena in the great works of Nature. Moss Copper is well known to miners, vegetating, as it were, out of cupreferous rocks A great portion of the green carbonates and oxides of copper are produced by a similar process. These kind of formations are more prevalent in the south temperate zone, as seen in Chili and Australia, than the veinous sulphurets. The bog iron ore is of the same origin. The gold mines of California are precisely of the same character, the quantity of the available gold being limited to the amount of the decomposed debris. The most perfect, economical, and the most expeditious method of reducing silver ore is the barrel amalgamation, in which process the consumption of quicksilver does not exceed 2 lbs. per ton of ore treated; but the quantity of salt considerable, viz, 10 per cent., or two cwts per ton, which, at some mines, is nearly six times the value of the quicksilver; consequently a process which would cause a reduction in this heavy item, would be much more important to silver mines than the quicksilver. After the sulphurets, oxides, &c., &c., have been converted into chloride, it is easy to obtain the silver by means of metallic precipitants—iron or copper—but the great practical difficulty in the large scale is, the conversion of the sulphurets and oxides into a soluble salt, by means of a *cheap* method.

It is an old saying, "that muriatic acid has no affinity for silver in its metallic state." In Chili, the silver predominates in its native state and oxides, and comparatively little sulphurets; therefore chlorides cannot be easily formed, without the aid of another element to bring the metal into solution. The silver must be decomposed or dissolved first, by *sulphate of iron*, before the salt can act and convert it into chloride. Chloride has not sufficient affinity, excepting in solution. It is, therefore, indispensable to mix the ore into pyrites to form the sulphate, as well as to decompose the salt; otherwise no perfect amalgamation can be effected. Quicksilver alone must be a slow and very imperfect process—not only causing a great wase of this metal, but, doubtless, also a heavy loss in silver; therefore, when salt can be obtained at a cheap rate, persons of practical experience will adopt it without hesitation, as being the most effective and economical means of extracting the silver from its ores.

Extracts for Young Men.

Give a young man a taste for reading, and in that single disposition you have furnished him with a great safeguard. He has found at home that which others have to seek abroad, namely, pleasurable excitement. He has learned to think, even when his book is no longer in his hand; and it is for want of thinking that youth go to ruin

Some of those who have been most eminent in learning and science made their first attainments in snatches of time stolen from manual employment. Hans Sachs, the poet of the Reformation, and the Burns of Germany, began life as did Burns, a poor boy; he was a tailor's son and served an apprenticeship, first to a shomaker, and afterwards to a weaver; and continued to work at the loom as long as he lived. The great dramatist, Ben Jonson, was a working bricklayer, and afterward a soldier. Linnæus, the father of modern botany, was once on the shoemaker's bench. Our immortal Franklin, it need scarcely be said, was a printer. Herschel, whose name is inscribed on the heavens, was the son of a poor musician, and at the age of fourteen years was placed in a band attached to the Hanoverian guards. After going to England, he undertook to teach music, and then became an organist. But while he was supporting himself in this way, he was learning Italian Latin, and even Greek. From music he was naturally led to mathematics, and thence to optics and astronomy. John Dollond, the inventor of the achromatic telescope, spent his early years at the silk-loom; and continued in his original business even for some years after his eldest son came to an age to join him in it. Few cases are more celebrated than that of Gifford, the founder and editor of the Quarterly Review. He was an orphan, and barely escaped the poor house. He became a ship boy of the most menial sort, on board of a coasting vessel. He was afterward for six years appprenticed to a shoemaker. In this last employment he stole time from the last, for arithmetic and algebra, and for lack of other conveniences, used to work out his problems on leather with a blunted awl. Few names are more noted in modern literature.

Voltaire's Character of Cromwell.

Cromwell is described as a man who was an impostor all his life. I can scarcely believe it. I conceive that he was at first an enthusiast, and that he afterwards made his fanaticism instrumental to his greatness. An ardent novice at twenty often becomes an accomplished rogue at forty. In the great game of human life, men begin with being dupes, and end in becoming knaves. A statesman engages as his almoner a monk, entirely made up of the details of his convent—devout, credulous awkward, perfectly new to the world; he acquires information, polish, finesse, and supplants his master.

Theories of Electricity.

We have some articles on this subject, from an able correspondent, which we will commence to publish with our new volume. The science of Electricity is engaging more attention at the present moment than any other.

Modern Inventions Subservient to the Progress of Christianity.

One of the speakers at the recent anniversaries in London, alluded to the influence of existing circumstances upon the prospects of Chrtstianity in the following terms:—

I believe that we have now a token, of what is going on in the world, of what is soon to be the triumph of Christianity. I know that I differ with some of you, as to the means of that triumph; and I heard it one day whispered that I was reported to have some odd crotchets about prophecy. I certainly do believe that the time which remains is short; but what do I propose? Not that we should do our work with greater energy, determination, and self-sacrifice. I believe that the candle is nearly burnt in the socket; let us, then, use what remains to advantage. I believe that the paper is almost covered with manuscript; let us crowd into it now more important statements still. If I believe that the twilight cometh, and that it may be attended with the disorganisation of Churches that we love, I also believe that it will be closely followed by the first dawn of that glory when it shall be declared, "The Lord God Omnipotent reigneth; the kingdoms of this world are become the kingdoms of our Lord and of his Christ." I see tokens of a great sun-burst in every part of the world, Our steamers are beating white the waves of every sea. The Tigris, the Nile, the Euphrates, the Indus, the Mississippi, and the Missouri, are the high roads of our progress and civilization. I see only the Divine hand in those remarkable discoveries that science is now making. Do you think that railroads were only meant, in the providence of God, to enable the manufacturers of Birmingham to buy cheaper in the London market, or for another purpose? Do you suppose that the electric telegraph was invented merely to tell the price of stocks? I do not believe it. I believe that these are the first responses of God to the truth of humanity—of our common brotherhood—and that the cement of that common brotherhood is the life and light of the Gospel. I believe these are the rails which are being laid down for a great victory—the great means of getting ready for the Divine bridegroom.

The Island of Cuba.

This Island is 624 miles in extreme length, with a width varying from 22 to 117 miles, and covers an area of 37,000 square miles, being about the size of the State of Maine. It contains a population, at the present time, of 1,400,000; of which about 610,000 are whites, 190,000 are free colored, and 600,000 slaves. Its imports in 1847 were $32,389,119, of which $7,049,975 were from the United States. Its exports during the same period were $27,998,-119, of which $7,049,975 were from the United States. Its exports during the same period were $27,998,770, of which $12,394,876 were to the United States. In 1847 the number of arrivals, at its ports, was 3740, and the number of clearances 3346. Its principal harbors are the finest in the world. The amount of American tonnage employed in the trade with Cuba is 476,773 tons. It has 195 miles of railroad completed and in successful operation, and 61 miles in course of construction. It is well watered by numerous rivers, and its surface, except in the central portion of the Island, diversified with mountains. Only two-fifths of its surface are cultivated. Of the remaining three-fifths, now unused, one is probably worthless, leaving one half of its agricultural resources undeveloped. The climate is so genial, that it yields two crops a year of many of its productions. It also abounds in materials for manufacturing purposes, and its mountains contain mines of copper which are worked to considerable advantage.

Extraordinary Feat of Screw Steamer.

The Egyptian screw frigate, Sharkie, beat the Oriental Steam Company's fine, fast packet, nearly 24 hours, in a passage from Falmouth, England, to Lisbon, Portugal. This was certainly great sailing. She made the passage from Falmouth in three days.

Upwards of 100,000 buffalo robes find their way into the United States and Canada every year.

Facts for Farmers.

Soiling.—The feeding of live stock in the summer with green food, cut daily, and given to them in houses, stalls or yards. A cow or ox requires from two to three acres of pasture or meadow to feed it all the year round, allowing a portion for hay. But by raising clover, lucern, sanfoin, tares, and other grain crops, three cows or more can be fed with the produce of one acre, especially, if a portion is in turnips or other succulent roots. Thus the straw of the white crops is converted into excellent manure, and the land kept in a state of fertility.

Soot—Its most active manurial principle in any case seems to be its ammonia, and is commonly exhausted in a single season, and sometimes acts so energetically as to deteriorate the succeeding crops. Its fertilizing action is more favorable to potatoes than to turnips, and more to the cereal and the pasture grasses than to clover or any other leguminous crops.

Stables—The site of every stable ought to be such as to ensure complete drainage, not only of all rain and snow water, but also and stringently of all effusion within, and especially of all urine. A perfectly and constantly dry stable is quite essential to the health and vigor of horses.

Strawberries.—Varieties can be selected to yield a succession of fruit in the open air during seven or eight months of the year, and to yield it with the aid of the forcing-house during the remaining four months. Most love a soil of rich loam; and all may be propagated from runners.

Steam.—In England and Scotland, hundreds of farmers have small steam engines, to churn, to thresh, to wash and do a variety of chores. Farmers who have small streams on their lands, if there is any fall at all, should erect water wheels, for *the above purposes.*

Wheat on Prairie Lands.

Some very successful experiments have been made this year and last, in the central and northern parts of Illinois, in the cropping of wheat on new prairie lands.

Near New Carthage, in 1847, Mr. A. Hamilton broke 100 acres of new prairie, finishing about the 1st of August. This he put in wheat, completing the sowing by the 15th of September. From this 100 acre tract he cut and secured 2,300 bushels of good wheat, losing enough, he thinks, through inability to harvest it in season, to have made the whole average 30 bushel to the acre. From this crop he is realizing the present season $1800. The breaking of the ground cost him $1 50 per acre, or $150 for the whole, and the inclosing of it $160 being at the rate of $15 per thousand for 10,000 rails, and $1 per thousand for laying the fence.

Secret of Living Always Easy.

An Italian Bishop having struggled through great diffiulties without complaining, and met with much opposition in the discharge of his Episcopal functions, without ever betraying the least impatience, an intimate friend of his who highly admired those virtues, which he conceived it impossible to imitate, one day asked the prelate if he could tell him the secret of being always easy. "Yes," replied the old man, "I can teach you my secret, and will do so very readily. It consists in making great use of my eyes. His friend begged him to explain. Most willingly said the bishop.

In whatever state I am, I first of all look to heaven, and remember that my principal business here is to get there; I then look down upon the earth, and call to mind the space I shall occupy in it; I then look abroad in the world, and observe what multitudes there are in all respects who have more cause to be unhappy than myself. Thus I learn where true happiness is placed, where all our cares must end, and how very little reason I have to repine or complain."

National Debt.

The British National Debt is due to about 270,000 persons. Nine millions of pounds sterling of the annual interest are divided among 150 or 160 persons. Seven millions more are divided between four and five thousand persons, and the remainder, less than half, is paid in small sums among 264,000 persons, or thereabout.

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New Inventions.

Electrical Current and the Magnetic Telegraph.

Jacobi has communicated to the Academy of Science at St. Petersburg an important paper on the electric telegraph, and the difficulties experienced when resort is had to subterraneous conduits imperfectly isolated. He treats, in like manner, of other inconveniences common to all electric telegraphs. He thinks that the advantageous results of his remedial devices will certainly be appreciated by all constructors. Baumgartner has made experiments on the telegraphic wires and the electric currents. This savan has ascertained that the wires are not subject to the electric action solely during storms. His experiments indicate the action even in serene weather and the absence of all appearance of storm. De la Rive remarks that they seemed to him to confirm the existence of natural electrical currents, which explain the diurnal variations of the magnetic needle, and the production of the Aurora Borealis.

Improved Force Pump.

Mr. D. L. Gibbs, of Manchester, N. H., has made some very beautiful improvements on the force pump, which are applicable to every pump and fire engine that we have ever seen. The improvements are three in number; one is a plan to secure the air chamber perfectly firm and tight, by two side wedges, one of the most simple arrangements that possibly could be conceived, which allows the air chamber to be taken off and put on in a few seconds; 2nd, A finger cam which, by pulling a handle, throws up the valves and allows the water below them to fall down to drain the pump and prevent freezing. 3rd, An entire new method of packing and screwing up the same—it can be tightened or slackened by the piston rod. Measures have been taken to secure a patent.

Valuable Bank Paper.

The manufacture of paper which defies fraud and forgery, seems to have been completely successful in France. A committee of nine persons, of the Academy of Science, encouraged a number of rival artists to make all possible experiments for the imitation of the specimen note, and for destroying in any way the idea of its infallibility, or inimitability. No pains were spared for this end, and the result is decided in favor of Grimpe & Colas' invention.

Yankees, and Yankee Inventions Abroad.

Kendall, in a letter from Brussels, says:—While passing along the streets this morning, I saw displayed, in a shop window, what I would almost take my oath, was a real, genuine, original Yankee *baby jumper*—if there was any difference between it and certain specimens I have seen in the States, in which juveniles were exercising and amusing themselves, my eye was not good enough to detect it. Over it, in large letters, was a sign, informing all the heads of families in Brussels, that it was a "Gymnase des Enfants," and underneath it was stated, that it was the invention of some individual with a very Flemish name—a name of about a dozen and a half of letters, the majority of which where v's o's and k's.

A little further on, in the same street, I saw in a shop window all sorts of magnetic rings, bracelets, and the like, warranted to cure rheumatisms and nervous affections generally, and these contrivances certainly bore a wonderful resemblance to Christie'e celebrated pain banishers. I have seen none of these things in Paris, where they are tolerably sharp, and must therefore think that the Belgians are ahead in the matter of copying "notions" that have first got head-way and a name on the American side of the Atlantic

Honey Sugar.

Mr. Soubeiran has read a paper to the Paris Academy of Sciences, detailing some interesting experiments in honey. He easily separated the granular sugar, which is only *glucose*, that is apparently in every respect the same sort of sugar as that extracted from juice of grapes and that formed by the action of acids upon the feculent substances. In the syrup which remains Mr. Soubeiran has discovered two different substances, one which he regards as identical in every respect with the sugar extracted from the sugar-cane, the other as a new species of sugar, to which he gives the name of honey-sugar.

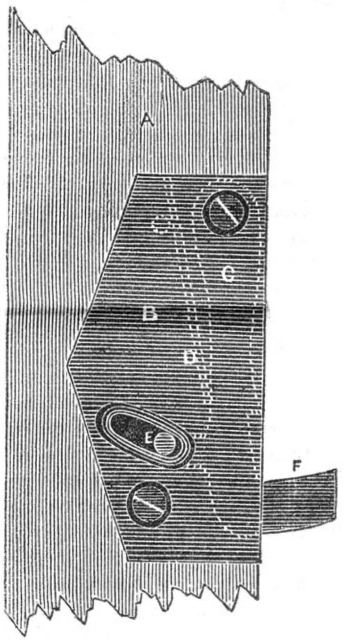
Life Boats on the Coast.

Several additional metallic life surf boats, with life cars and other apparatus, for preserving life from shipwreck, have been placed at proper stations on the coast of New Jersey. The cars are constructed to run on a rope extended from the wreck to the shore, and are capable of receiving three persons from a wreck, and conveying them to the shore through the surf.

Dodges Improved American Spinner.

Mr. Dodge, well known in this county for his improvements in spinning machinery, has introduced his machine into England. It has been in operation in Manchester, and has been visited by all the eminent manufacturers of that City.. It has received the commendations of many skilful spinners, and will no doubt, soon be extensively introduced into old England.

Improved Window Latch.



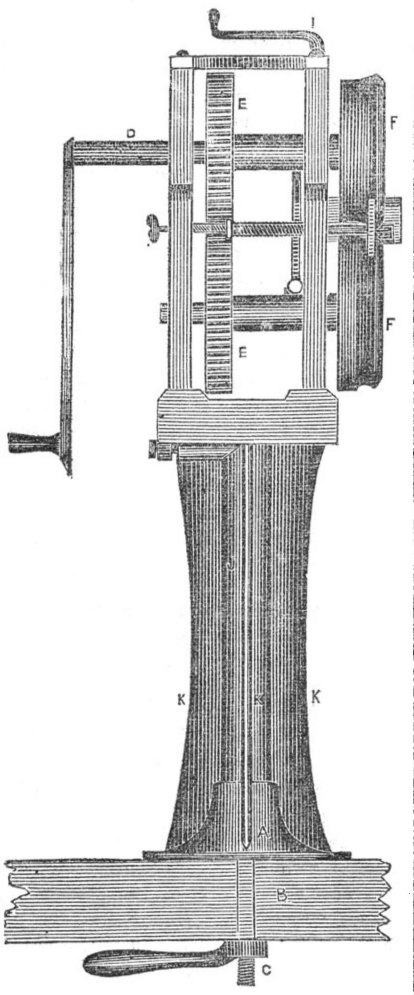
This Window Latch is the invention of Mr. A. M. Badger, of Rochester, N. Y., and a very excellent one it is. It will be at once understood, almost without a word said about it in explanation. The dotted lines represent the catch arm inside, also a spring which presses against it; A is the window frame—it is cut out to receive the latch; B is a plate screwed on to the frame, retaining the catch, F, between it and a plate inside, with room enough for the catch to move between. C, represents the arm of the catch inside, and D is the spring pressing against the back of it to keep F always thrust out into the notch in the window sash, to keep the window from being lifted up or falling down. E is a knob on the arm of the catch. This knob projects out of the plate through the opening. This knob is to draw back the catch, F, to allow the window to be elevated or let down. Its utility is unquestionable.

Machine for Sharpening and Setting Saws.

Mr. R. O. Gurley of Redding, Conn., has invented a beautiful and very unique machine for sharpening and setting saws of every description. No file nor hammer is used in the operation, but by the simple working of a toggle joint lever, the saw is sharpened and set at the same time. This machine is simple, cheap and can sharpen five saws faster than one can be sharpened by any way at present in use for that purpose, and what is better, any person can, with a minute's instruction, sharpen the saw with the utmost correctness.

Improved Tinsmith's Wiring Machine.

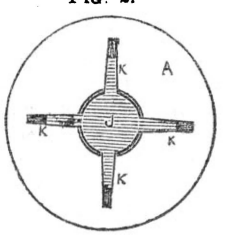
Fig. 1.



This is an improved Wiring Machine, invented by those famous manufacturers of Tinmen's Tools, Messrs. Roy's & Wilcox, of Berlin, Conn.

Fig. 1 is a side elevation, and fig. 2 a horizontal section, taken at K K, fig. 1. The improvement consists in a cast metal standard, J, permanently secured to the machinery above, having a vertical axis, C, passing into ~~and through an opening in the table, B,~~ made fast by a handle and screw, to turn round the machine in any direction, upon its axis. Tinsmiths will at once appreciate the value of this simple invention, as it makes the machine far more convenient. The machinery for wiring is the same as that in common use. Its operation need not, therefore, be described; B is the table, A is the circular base of the standard, J and K K are flanges cast on the standard. Fig. 2 exhibits the form of these; D is the handle, E E is the connected gearing of the rimming rolls F F.

Fig. 2.



The inventors have taken measure to secure a patent. All orders, post paid, will be promptly attended to, and any other information obtained in the same way.

To Preserve Water.

The London Patent Journal says, that M. Perinet, ex-Professor of the Hospital Militaire d'Instruction, has succeeded in preserving water in a sweet state, by placing a kilogramme and a half of black oxide of manganese in each cask of water containing 250 litres. He has kept this water for seven years in the same barrels, and exposed them to various temperatures; at the end of that time, he found it as limpid, free from smell, and of as good a quality as at the beginning of the experiment.

[If this is positively true, it is a great discovery. A kilogramme is 2 lbs., 3 oz., 5 drachms, avoirdupois; A litre is nearly 2½ wine pints.

A correspondent of the United States Gazette states that it was Mr. Daniel S. Brown who introduced Nankin Cotton seed into this country.

Improvement in Knitting Looms.

About a year ago, we noticed, that Mr. John Pepper, Portsmouth N. H. had made some valuable improvements on knitting machinery. He has now had for nearly two years his knitting power loom in operation and it has given great satisfaction, but since he first commenced improving, he has made some new machines which have far surpassed his first efforts. The Editor of the Portsmouth Journal has recently visited the establishment of Messrs. H. and J. Crane of the above place, where Mr, Peppers' looms are in operation, and he speaks as follows regarding their nature and operation.

"The common English Stocking Plain Hand Loom, the most perfect machine that had been in operation up to the time of Mr. Pepper's invention two years ago, will produce 2½ dozen of shirts or drawers. The English Hand Ribbed Loom will produce 2 dozen ribbed shirts or drawers per week.

The Plain Rotary Loom, invented two years since by Mr. Pepper, 44 inch machine, will produce per week by the attendance of one girl, 7 dozen shirts or drawers. His Improved Ribbon Loom of two years ago, with the attendance of one man, will produce 5 dozen ribbed shirts or drawers per week.

The last invention, which we have just seen in operation, is unlike in appearance to any other stocking looms occupying just half the space of the improved looms.

The newly invented Plain Loom, of the the same width of the old, by one third of the power and the attendance of one girl, will produce 28 dozen shirts or drawers per week, The newly invented Ribbed Loom will produce 18 dozen shirts or drawers per week. All the above are 24 gage

The looms are so constructed that they will weave strong yarns, that cannot be woven either on the English or Improved looms,—thus producing a more durable fabric than has been heretofore produced.

The machinery is so arranged that the looms can be operated in sections,—and can of course be built any width, as each section can be operated independent of all others."

Test for Good Limestone.

The best lime for agricultural purposes is that which is lightest, whitest, and softest to the touch; the purest and strongest lime is always found the lightest. If, then, by calcination, limestone loses much of its weight by the process; if the lime shells are extremely light, and require, for slaking them fully, a large portion of water; if there are a considerable time before they begin to fall; if, during the process of burning, the limestone is not disposed to run or become vitrified; if it increases very much in bulk by slaking, and the lime is of a pure white, and fine and light to the touch, it may be set down as very good, and should be used in preference to other lime not possessing the same qualities.

Peat Bogs.

Some time ago we alluded to a discovery made by a Mr. Rhys respecting the composition of peat, and that candles and soda had been made out of it. By a number of experiments 100 tons of peat has produced

Carbon of ammonia . .	2,692 lbs.
Soda	2,118 lbs.
Vinegar	600 lbs.
Naptha	30 gals.
Candles	600 lbs.
Camphene Oil	600 lbs.
Common Oil	800 lbs.
Gas	
Ashes	

By the laws of England, which allow patents to be taken out in the name of the introducer of the invention, a Mr. Owens is the patentee. He is a man of wealth, who has invested his money in the business, and has received very profitable returns. There are many peat masses in various parts of our country; they might be turned into mines of wealth by this discovery.

New England's Fair Daughter's.

The Boston Post says of them, "Industry and virtue being their inheritance, they blush on being kissed by the rising sun in the morning; and are not ashamed of being kissed by the setting sun in the evening."

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NEW YORK, SEPTEMBER 1, 1849.

Inventors and their Friends.

In these days of uprorious philanthrophy; when every convention of *benefactors* projects some mighty schemes for the benefit of others (their own benefit, good folk, they never thought of,) it is really surprising that some of the worthy ones among them—those on whom fortune and fame have showered down their blessings, do not endeavor to ascertain what becomes of the numerous inventions that are so often brought forward amid great study, toil and penury. The enquiry would be highly honorable and its utility beyond all question. Two years ago there was a Convention in this city, for the purpose of benefitting inventors. It never benefitted a single one. We had hoped that it would have done some good, as Professor Renwick, and a number of other eminent men were at the bottom of it; but alas! we believe that it did more harm than good, for a great many inventors were deceived by it. A Convention, not of Inventors, but a Convention to revise the Patent Laws, and endeavor to get the same passed by the next Session of Congress, assembled in Baltimore last week, and have transacted some business. We do not wish personally to say a word against any one that was there, for among the number were some sterling men, but we speak no more than truth, when we say, that the said Convention had neither the confidence nor countenance of the inventors of the United States. We are sorry that it was made up of so many patent speculators—no good can come out of it to inventors. On this point we are as positive as we are that the sun rules the day. It is not for us to be invidious—we never have been characterized by such a spirit, but as a watchman on the wall, we must, in justice to our own feelings, and in justice to our inventors, say regarding the said Convention, "We have no hope of any good resulting from it." If any one asks us for a reason, in giving this opinion, we answer, it will be given in good time, the wires have been traced from source to termination, and every vibration of them noted down by a faithful hand. If the majority of the men who composed it, had heretofore been as distinguished for friendship to inventors as they have been for selfishness towards them, we would have had some hope.

Speaking of inventors, happy is the one who finds a true friend to assist him and defend his rights, but where there is one man like Bolton, there are fifty standing "like greyhounds on the slip," ready to plunder him both of honor and property. Inventors should be honored and rewarded, but they are generally neglected and over-reached. Doubt it who may, invention is the soul of all progress in manufactures, and it is owing to the fervid mechanical genius of our people that America is so far advanced in every thing great and glorious. Look at those nations that are destitute of inventors. What are they, and what is their condition? What position do they occupy in respect to progress in the useful arts, and in respect to knowledge and civilization? A very low position, indeed, in comparison with the United States of America. It is our duty to advocate the rights of inventors, with zeal and faithfulness. We welcome every movement which has for its *true* object the honor and advancement of inventors, and while we do this, we cannot truly fulfil our whole duty unless we try and distinguish between their real and pretended friends.

Cholera in New York.

This disease has nearly disappeared from our City. No new cases have been recently reported. We have had some of the most beautiful and invigorating weather during this and the past week. The city is now very healthy.

Mechanical Fallacies.

Among the many incorrect opinions formed by some men, there is none more often advanced than "a certain gain of power" by such and such an invention. We have a letter now before us in which the author of it makes this statement, "I have gained fifty per cent. of power." This might possibly be true of some machines, but he makes this statement respecting the steam engine. It would say but little for the scientific intelligence of the day, if our steam engines consumed 50 per cent. of their power on themselves. But this is not so, nor do good engines expended 25 per cent. of their power on themselves. In conversation one time with a very ingenious, but not scientifically correct acquaintance, (not a practical engineer) he told us that he had constructed a rotary engine, which "he built for a 12 horse power, and when he came to try it, lo and behold it was no less than 36 horse power." We asked him how, and in what manner he computed its power. "By the common way," was his prompt reply. It was sometime before we could make him understand that he had gained 24 horse power, when no other person nor engine ever lost or could find it. No person can make an engine that will have fifty per cent more power from a given quantity of steam, than another engine. Why? Because 100 per cent. is the full value of the steam, and there must be something lost by friction, and beside, to gain 50 per cent., there must, in this case, be 50 per cent. of a loss.

The way to calculate the power gained by any improvement, on a machine, is first to know the real power lost. For example: an over-shot water wheel gives out 75 per cent. No improvement by mortal man on it could therefore gain 26 per cent. There may be a gain from the 75, upwards, towards the 100 per cent., but not beyond that point, nor up to it exactly.

There is one way whereby it might be said, we can gain 100 per cent. on the steam engine, viz., if it heretofore took a pound of coal to raise one cubic foot of steam, and by an improvement in the furnace, &c., the cubic foot of steam was raised with half a pound of coal in the same space of time. Here the same quantity of steam has been raised with one half the amount of fuel.

Iron and Copper Steam Boilers.

We have seen article in some of our exchanges, inveighing against our government for employing copper steam boilers at a cost of $120,000, while iron ones would cost only $34,000. The article says, "It has been for many years, and still is, the practice of scientific men to recommend copper in preference to wrought iron, for boilers to heat water or other fluids, on the ground of the superior conducting power of the former over the latter metal; and it will doubtless appear strange to many, that a doctrine so well established should now for the first time meet with the most unqualified dissent. The superior conducting power of copper over iron admits of no doubt, and yet upon this confessedly correct basis has been raised the most fallacious doctrine the whole range of scientific engineering of the present age can produce. It is scarcely possible to imagine the enormous amount of money wasted, and worse than wasted, in this country alone, by the use of copper instead of iron in the boilers of steamboats, to say nothing of locomotives. That such an enormous outlay should be sanctioned may well excite surprise, founded, as it is, upon an engineering blunder. The experiments which have been made, proving that copper is a better conductor of heat than iron, are principally those of M. Brot, and M. Despretz. On a bar of each metal being plunged into a bath of mercury or of molten lead, it was found that although the temperature of each was of course almost if not absolutely identical, at the smallest appreciable distance from the bath, that the copper, being the best conductor of heat, kept it to itself, or would not readily part with it while the iron was an inferior one in conducting power, in consequence of parting with it more rapidly; the term "good conductor" has therefore been applied erroneously, because it was intended to convey the idea that it would convey or conduct the heat or caloric of the fire, through itself, into the water, on the other side, which does not apply to the copper but to iron, which is confirmed by the facts which are well known, that the absorptive and radiative powers are always equal in the same metal, and are far greater in iron than in copper, while the latter metal is in the same ratio the best reflector; for reflection is inversely as radiation, as proved by Leslie and others. The power of reflection, then, appears to control that of radiation, &c., &c., confine the caloric within the metallic (copper) surfaces, or at least within that depth in which the power of reflection lies."

[We cannot tell who is the author of the above, as it is not original with the paper from which we have selected it. We believe that good iron boilers would have answered every purpose in our naval steamship, but we do not believe that the above is correct in reference to the nature of copper in communicating heat to the water, and beside, it is not the only object for using copper as a material for marine steam boilers. Any person who has the least acquaintance with experiments in Natural Philosophy, knows full well that the alledgment above, in reference to M. Brot and M. Despretz, being the *principal experimentors* on the conducting power of metals, is not correct. The common experiment to test the conducting power of metals, is to take four rods of iron, lead, copper, and brass, or as many as you chose, and place on the top of each, a piece of phosphorous; then insert their lower ends into water in a vessel made for the purpose. The spirit lamp is then applied to heat the water. When the phosphorus is heated to 148° it takes fire. Well, if the conclusions of the writer above be correct, the phosphorus on the top of the iron rod will take fire before the phosphorus on the top of the copper rod. Why? Because, he says, "the copper keeps its heat more within itself, it being the *best reflector*, but *the worst radiator*." But every school-boy knows that the phosphorus on the top of the copper rod becomes ignited before the phosphorus on the top of the iron rod, thus proving conclusively, that the copper first gave out, as well as conducted, the 148° of heat. Reflection has nothing to do with the copper and iron steam boiler, and the names of *Leslie and others*, conveys an impression of high learning, but it is not right to apply their investigations incorrectly. Brass tubes are used in steam boilers for two purposes, one is their superior conducting qualities, and the other is, the scale does not adhere so tenaciously to them as to iron. The latter reason, no doubt, was the one which influenced the government to employ copper boilers in preference to iron ones. We believe that a number of British steamers that run on the Mediterranean Sea and the Indian Ocean, have copper boilers only to obviate the evils of incrustations. As it respects the superiority of copper over iron or iron over copper, it is still a disputed point, (taking all things into consideration) among engineers.

Explosions.

Two explosions of steam boilers recently took place in Cincinnati. One on the 18th at the iron foundry of Pollock & Jones, the force of which threw the boiler some thirty feet from its bed, and the heavy iron shaft of the engine directly through the foundry into the street. The explosive force fortunately was directed upwards. There was a perfect shower of brick bats all around for half a square; several persons were struck by them but none seriously injured. The other was the collapsing of a flue of the boiler at Messrs. Ambrose & Rose's Planing Mill; the boiler was thrown some 400 feet, passing through several shops, and finally landing in the 2nd story of a frame house. A man named Valentine was carried 60 feet in advance of the boilers, and dashed to pieces. Another had his skull badly fractured and he is not expected to live. The cause of the latter accident has been attributed to the carelessness of the engineer. Carelessness or selfishness, we believe, are the prime causes of such accidents.

The Spanish Government owes Great Britain the sum of $45,000,000. Lord G. Bentick wanted the British Government to take possession of Cuba as a guarantee for the payment of it.

The Scientific American.

Since we called the attention of our subscribers two weeks ago to our forthcoming volume, we have been favored by that promptness of response which in general have always characterized our subscribers. One writes that he "would not be without the Scientific American every week for double the amount of subscription." Another writes that "it is worthy of the age and our country," and another writes, "that it contains more useful receipts and practical information than any other periodical in the world." We have many such compliments; we will endeavor to be more worthy of them still.

To our Cotemporaries.

We find, by actual count, that our Exchange List amounts to over 800 per week, and we shall take the liberty of discontinuing to send the Scientific American to any but such papers as publish our prospectus. The peculiar interests represented by us render our publication an acquisition to every paper in the country, and scarcely a day passes that we do not have requests to Exchange; we would gladly do so in every case, but cannot, unless they comply with our terms. We wish all old and new papers a generous support, and trust they will not consider us illiberal because we may refuse an exchange with them. Papers publishing the new prospectus, will please mark it, in order that it may not be overlooked, as complaints in this respect are very unpleasant to us, and we hope to hear none.

Camden and Amboy Railroad.

The people of New Jersey are beginning to open their eyes to the penny wise and pound foolish policy of taxing travellers and produce passing through the State, for the purposes of a revenue. The citizen of New York who may journey to see his cousin in Philadelphia, must not only pay the Railroad Company his fare of passage, but he is doomed to pay a poll tax, as a State revenue, beside. This policy, is not only unwise, but it is inhospitable and anti-republican. New Jersey is often reproached for raising a revenue from the people of other States who are obliged to cross her territory, thus escaping taxation herself. New Jersey, by her natural situation, has every advantage for growth and prosperity, yet she has been kept down below New York and Pennsylvania, chiefly by this railroad monopoly, which operates to reduce the value of land, on account of the expense of sending produce to market.

Bear's Oil Superseded.

The Richmond Republican says that Mr. M. Wise, a farmer of Rockingham county, has discovered a certain means of restoring the growth of hair on the head. An examination of the pores of skins which had been prepared for tanning, showed that after one crop of hair had been extracted, there were a second set of roots below those which were drawn out of the upper pores of the skin, and this peculiar formation of the skin of an animal he thought not unlikely to exist in the human head. Hence it occurred to him that if the skin on the head of a person could be softened, and the lower pores so reached with the right kind of invigorating application, a new growth of hair would be produced. He had applied his remedy to the heads of several persons in Richmond, and the Republican says: "We have ourself seen new and luxuriant growths of hair upon the heads of several of our citizens, whom we knew to be almost entirely bald a short time since. In most cases the hair has made its appearance in eight or nine days after Mr. Wise's first application—and, in one instance only, about four days elapsed before the new hair began to grow."

[This will be very interesting news to a great number of people. We have but one suggestion to make on the subject, it is merely to recommend to Mr. Wise an investigation beneath the skin of the pate, as there are two kinds of baldness, the one mentioned above, and the other that of the brain. The latter evil is prevalent enough, and has been often pronounced *incurable*.

A review of Judge Kane's decision in the case of Wilson versus Barnum, will appear next week. It has unavoidably been delayed.

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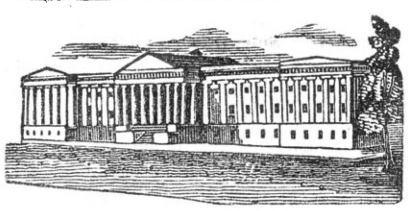

LIST OF PATENTS.

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending August 21, 1849.

Allen Burdick, Saratoga Co., N. Y. for impovement in Meat Cutters. Patented August 21, 1849.

John W. Cochran, London, Eng., for improvement in mills for Sawing Ship Timber, &c. Patented August 21, 1849.

Elisha M. Pomeroy, of Wallingford, Conn., for improvement in the manufacture of Buttons from Straw-board. Patented August 21, 1849.

Edward and Joseph L. Hall, of Cincinnati, Ohio, for improvement in Fire Proof Safes. Patented August 21, 1849.

Benjamin O. Swain, of Annisquam, Mass., for improvement in Planetariums. Patented August 21, 1849.

Edward Finch, of Liverpool, England, for improvement in the manufacture of Car Wheels. Patented August 21, 1849.

A. D. Baldwin, (Assignee of James Bell,) of New York, N. Y., for Combined Sash and Inside Shutter Fastener. Patented August 21, 1849.

Josiah Kirby, of Cincinnati, Ohio, for imvement in Treenail Machines. Patented August 21, 1849.

James C. Cochrane, of Rochester, N. Y., for improved Self Acting Sash Fastener and Stopper. Patented August 21, 1849.

John Decker, of Belle Air, Md., for improvement in Ice Cream Freezers. Patented August 21, 1849.

Samuel H. Camp, of Hartford, Conn., for improved Angular Rotating Tuyere. Patented August 21, 1849.

Andrew Fife, of Philadelphia, Pa., for improvement in Inkstands. Patented August 21, 1849.

G. A. Arrowsmith, (Assignee of Walter Hunt), New York, N. Y., for Combined Piston Breech and Firing Cock Repeating Gun. Patented August 21, 1849.

John C. Nichols, of Woburn, Mass., for improvement in Dining Tables. Patented August 21, 1849.

DESIGN.

To Pease, Keeney & Co., (Assignees of Wm. L. Sanderson,) of Troy, N. Y. : Design for Stoves. Patented August 21, 1849.

NOTE—The patent purporting to be issued to Arthur Huston, of Bristol, Me., for a Dynamometer Log, to indicate the velocity of vessels, dated the 14th August, 1849, was inserted in the last published list by mistake.

Facts and Observations on Cholera and the Atmosphere,

BY B. F. STICKNEY.

With facts and observations communicated in my articles on Motion, with some facts subsequently obtained, principally by the exertions of others; we think it can be shown, that when Epidemic Cholera prevails, there is greater weight in the atmosphere, and less electricity.—That the presence of Carbonic Acid Gas expels the Electricity—hence the cause of the Epidemic.

As I stated in my articles on motion; a number of years ago, in making experiments on Electricity, I had coated jars at hand, and after having prepared some Carbonic Acid Gas, and made use of what was then required, there being some left, I put it into a coated jar that belonged to an electrical battery, that was at hand. Some time afterward, the jar was required for electricity, and an attempt was made to charge the jar; but in vain. We now thought of the gas—and had it filled with water; and after pouring it out, and drying the jar, there was no difficulty in charging it. This we took to be sufficient evidence that the carbonic acid gas repelled the electricity.

We have seen recently an article in the Scientific American containing the following statement, by professor S. C. Beek of Rutger's College, in a communication to the Newark, N. J. Sentinel, expresses the same opinion, as Prof. Olmstead.

He says that Dr. Prout of England, conducted a series of correct experiments on the atmosphere and discovered, that it became heavier when the cholera first made its appearance in London, in 1832, and he attributed the increased weight of the atmosphere to some foreign body in it, which was in some way connected with the cholera.

We think the above experiments show that during epidemic cholera, there is present in the atmosphere, some extraneous heavy fluid, that gives extraordinary *carbonic acid gas*. We have some other facts that go to show that the same unusually heavy state of the atmosphere, has existed during the prevalence of epidemic cholera, in this region of country. A French Mathematical Instrument maker, now of Cincinnati, came here (Toledo O) by the way of Sanduskey City, by the name of Henery Meyer. He had with him some barometers of his own make, for sale. in conversation he told me, that at Sanduskey City, he took the height of Lake Erie above the ocean. I asked how much he made it; he said 350 feet. I told him that the Lake was established at 574 by the survey of the Erie Canal. I suggested a doubt, of the accuracy of his instruments; he averred their accuracy could not be doubted, after the thousands of tests of the rules by which they were made. I examined his instruments, measured the length of the tubes, and the scales, and found them accurate; and I took one of them. I now commenced making observations here, 13th, or 14th of July 1849. The Epidemic Cholera had commenced here, and was very violent at Sanduskey City. The atmosphere continued extraordinarily heavy until the 4th of August, when there was some thunder and rain and a small depression of the mercury in the barometer, showing lighter atmosphere. The 7th there was a heavy thunder shower, and the mercury sunk near half an inch. In the normal state of the atmosphere we should expect to see the mercury rise again when the clouds cleared off. But this was not the case. The mercury that evening, although nearly clear, had risen only about the 20th of an inch; and the Cholera had ceased here. As the atmosphere became more heavy, the the Cholera was more virulent; and as the atmosphere became lighter the Cholera ceased.

In my articles on Motion, I have suggested what Dr. Audrand has proven to be the case.

Dr. Audrand, of Paris, has communicated to the Academy of Sciences, the following interesting letter upon the connection between the Cholera and Electricity.

PARIS, June ist, 1849.

Throughout the varying courses of the ravages of the cholera in Paris, that is to say during the past three months nearly, I have studied the action of the electric machine daily, in order to satisfy myself whether there is not a fixed connection between the intensity of that scourge and the absence of the electric fluid usually diffused throughout the atmosphere.

The machine which has been the object of my daily observations is a very powerful one. At ordinary times it throws off, after two or three turns of the wheel, denoting sparks from 2 to 24 inches in length. I at first observed that from the commencement of the epidemic it was impossible for me to produce this result once."

"During the months of April and May the sparks obtained with great difficulty never exceeded seven-tenths of an inch, and the variations agreed very closely with the irregularities of the cholera. This supplied at once a strong ground of belief that I was close upon the important fact I sought to establish; yet I was not quite convinced, since the variable moisture of the atmosphere might have caused the irregularities of the machine."

"I waited, therefore, with impatience, the coming fine weather and heat, to continue my observations with more certainty Heat and fine weather at length came, and to my amazement, the machine, though often referred to, far from denoting, as should have been the case, an increase of electricity, only gave more feeble indications of it to such a degree, that during the days of the 4th 5th and 6th of June, it was impossible to obtain more than slight cracklings, without sparks, and at length on the 7th, the machine remained entirely silent. This new decrease of the electric fluid coincided perfectly as is well known, with the violence of the cholera.—For my part, I felt appalled rather than surprised, my conviction was fixed, and I saw in it the result of a clearly established fact."

"It may be imagined with what anxiety, in these critical instants, I consulted the machine, the sad and truthful witness to a great calamity. At length, on the morning of the 8th, feeble sparks reappeared, their intensity increased from hour to hour and I perceived with joy, that the life giving fluid was returning into the atmospheric void. Towards evening a storm announced to Paris that electricity had re-entered its domain; in my view the cholera was vanishing with the cause that produced it. The next day, Saturday, the 9th, my experiments were continued, and every thing had then returned to its proper condition: the machine at the slightest touch threw out brilliant sparks with ease, and, it might almost be said, with delight, as if aware of the good tidings it was bringing."

If all this be true; we have in the barometer and Electric machine two oracles, which if consulted will give the unerring truth in response—that the fatal epidemic, is approching, is present, is departing, or departed. and we must look to the che mist, when Nature takes such freaks, to furnish us, for the time, with an artificial atmosphere better suited for our respiration:

Mushroms.

The underparts of the cap, of the true mushroom are loose and of a pinkey red, changing to a liver-color, situated close to the stem, but not united to it; very thick set, irregularly disposed some forked next the stem, some next the edge of the cap, and some at both ends, in which case the intermediate smaller gills are generally excluded. the cap or pileus is externally white, changing to brown when old, and becoming scurfy; it is regularly convex, fleshy, flatter when old, from two to four inches, but sometimes even nine inches in diameter; it liquifies as it decays; the flesh is white. The stem is solid, white, cylindrical, from two to three inches high, half an inch in diameter. The *curtain* or membrane, which extends from the stem to the edge of the cap, is white and delicate. When the mushroom first makes its appearance, it is smooth and almost globular, and in this state is called a button. This specie is esteemed the best and most savory, and is much in request for the table. It is eaten fresh, either stewed or broiled, or preserved as a pickle, or in powder: it also furnishes the sauce called ketchup. The field plants are better for eating than those raised in artificial beds, their flesh being more tender; but the cultivated mushrooms are better looking, may be more easily collected in the proper state for eating, and are firmer and better for pickling.

The wild mushrooms are found in parks and other pastures where the turf has not been plowed up for many years. The best time for gathering them is in August and September.

Those who are accustomed to mushrooms can distinguish the true from the false by the smell. The following test will be found useful to other persons: Sprinkle salt on the spongy parts or gills of the mushrooms to be tried. If they turn yellow, they are poisonous; if they turn black they are good. Allow the salt to act a little time before you decide as to the color.

CHARACTERS OF FALSE MUSHROOMS OR POISONOUS FUNGI.—They are apt to have a warty cap, or else fragments of membrane adhering to the upper surface; they are heavy, they emerge from a *vulva* or bag: they grow in woods and shady places, or in tufts or clusters on the trunks or stumps of trees: they have an astringent styptic taste and a pungent and often naseous odor; they become blue after being cut; they are moist on the surface; they possess an orange of rose-red color, they turn yellow when salted, Mushrooms which possess any of these properties, are to be shunned as dangerous.

Bishop Watson, Geologising.

The famous Bishop Watson, was often a visitor at Dallam Tower near Kendall, England. In one of his rambles during an university vacation, he got to the top of Helm Crag, not many miles from Kendal, and picked up a substance which he at once pronounced to be thrown from Ætna, or Vesuvius, or some volcanic crater. On his way home he came naturally enough to the conclusion that Helm Crag itself was an extinct volcano. At dinner-table he produced this piece of lava as proof conclusive of his amazing discovery. The authority of a professor fresh from his labaratory, and still fresher from the University of Cambridge, could not be gainsayed—the gentlemen too well bred—the ladies too gallant to attempt it. There was one man, however, within hearing, on whom all this excited but a smile—the old family butler. Of course he said nothing then, and Watson's discovery was all in all; but on the following morning, finding the doctor in his library poring over the lava and taking notes, thinking probably that the honors of Dallam Tower were now at stake, and with the privilege of his order he administered to him this salutary information: "Dr. Watson, excuse me, but I thought I heard you say at the table yesterday that Helm Crag was an extinct volcano. I don't know what an extinct volcano is, as I never saw one; but I do know that, when I was a lad, my father and I had a blast furnace on Helm Crag, and that's a piece of the cinder from the very spot." Facts are stubborn things: the doctor looked aghast over his spectacles, put up his note-book, and with a gold guinea silenced, at least until the doctor's departure, the discovery of the doctor's ignorance.

The Dimond.

The Mining Journal says: "Interesting as this queen of gems to all, and although they are exposed in dazzling quantities in all our jewellers' windows, it is strange that the art of cutting and polishing diamonds is almost unknown in London, we may say in England. We believe that there is but one individual in London who follows this peculiar art. The Dutch have, for ages, nearly monopolized the diamond cutting trade of Europe; and so expert are they that on our showing them a rough diamond, they will tell, to the greatest nicety, what will be its shape when cut and almost to the hundredth part of a grain what the polished gem will weigh. It follows, therefore, that most of the rough diamonds which come to this country are sent to Holland to be polished. Diamonds are found of very different colors to what is generally believed; not only are some pure, colorless crystals, but yellowish white, gray, ash gray, blueish gray, yellow and greenish gray, indigo blue, passing into red, clove, various shades of brown, asparagus, leek and mountain green; and Mr. Mons mentions a grayish black diamond, the rarest of all."

A Noble and Refined Compliment.

"I shall never," says Ledyard the traveller, in writing to Mr. Jefferson, the American statesman, from Egypt, "think my letter an indifferent one, when it contains the declaration of my gratitude and my affection for you; and this, notwithstanding you thought hard of me for being employed by an English association, which hurt me much while I was at Paris. You know your own heart; and if my suspicions are groundless, forgive them, since they proceed from the jealousy I have, not to lose the regard you have in times past been pleased to honor me with. You are not obliged to esteem me, but I am obliged to esteem you, or to take leave of my senses, and confront the opinions of the greatest and best characters I know. If I cannot, therefore, address myself to you as a man you regard, I must do it as one that regards you for your own sake and for the sake of my country, which has set me the example."

Coast Surveys.

Capt. Videl, of the British Navy, for many years engaged in the government survey of the African coast, the Azore Islands, &c., has politely presented copies of his new chart of the Western and Azore Islands to the Chamber of Commerce, and the Messrs. Blunt, the New York hydrographers.

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TO CORRSPONDENTS.

"J. C. of N. Y."—The money will apply,—we do not furnish models of mechanical inventions.

"E. L. of N. Y."—We do not think that your devise can be patented, it being the same instrument, in miniature, as the log lever and hook which has been in use from time immemorial.

"A. A. D. of N. H."—We are not aware that locomotive engineers and firemen experience much inconvenince from cold feet, and do not think, that any devise simply to warm their feet wonld meet with success.

"Wm. H. L. of Ill."—You had better send us a model of your machine, and we can speak more confidently of its merits. The sketch you have sent us is so imperfect, we cannot form any just opinion of it.—They are both in the predicament.

"J. N. L. of N. Y."—Your description is so imperfect, we can form no definite idea of your invention. If you will construct a model of it and forward to us, we will furnish you with all the information upon the subject, possible.

"E. P. C. of Ill."—If you will address Messrs. Ball and Rice, of Worcester, Mass, you will undoubtedly obtain the desired information in regard Mr. D.'s machine, they are not made in this city.

"B M."—We have received your letters and specification, but have taken no steps in the matter,—awaiting the arrival of the person to whom you refer.

"A. L. of Ct."—We cannot send you the numbers desired, not having them on hand.

"D. M. of Ohio."—We can furnish you with vol. 3 bound, for $2.75. vols. 1 & 2, we have not got.

"A. C. S. of N. Y."—If you will address a communication to Mr. Luther Tucker of Albany, you will, no doubt, obtain the information desired, as he deals in such articles.

W. H. C. of Alabama, W. R. H. & Co. of Connecticut, R. A. S. of Ohio, your papers have been forwarded to the Patent Office.

Money received on account of Patent Office business since Aug 22—H. & C. of Mass. $35; W. R. H. & Co. of Connecticut, $50; S. Du B. of Georgia, $20; P. S. E. of New York, $22; J. C. of New York, $28.

Paper made by Wasps.

The Tradesman's Journal says that the manufacture of paper. the secret of which was not discovered for centuries, has been carried on by the wasp ever since the creation. They make it in the same way, and of materials employed for the purpose by experienced workmen of the present day. In selecting the materials the insect is peculiarly fastidious, and is cautious to take nothing which is not of a filamentous nature, as the pulp of linen rags. It consequently rejects sawdust and every thing of that kind, and resorts to the filaments of wet wood and decayed vegetables, which have been rotted in the rain. These are worked up by means of a glutinous secretion, converted into paste, and rolled into a ball, which is easily conveyed to the spot where it is required. The substance of this ball is then rolled off into threads; these, by the repassing of the animal over them, are consolidated into sheets of sufficient strength and thickness to resist tho rain" With all the aids, therefore, of chemistry and machinery, men are now manufacturing paper in substantially the same way this insignificant insect has done for thousands of years.

The Iron Manufacture.

How much the iron interest is suffering in this country by foreign competition, may be best judged by the fact, stated by the Albany Evening Journal, that the Directors of the Hudson River Railroad Company have actually paid to Peter Cooper, Esq. of Trenton, the large bonus of $54,000, for permission to retire from a contract entered into with him for rails. The contract was made for $67,50 a ton, but since the English rails are offered in the market in unlimited quantities at about $40 per ton, the Company find it profitable to pay Mr. Cooper $54,000 to render the contract a nullity, and then turn round and buy English iron. American iron masters cannot live in the face of such competition.

Heavy Damages and Important Verdict.

Rev. Alexander Campbell, President of Bethamy College, U. S. has received $10,000 of the Rev. James Robinson, of Scotland.—Mr. Campbell (says the Philadelphia Ledger) on a tour through Scotland, in 1847, was arrested and imprisoned in Edinburgh, through the agency of the Rev. James Robinson, for having, while discoursing on the subject of slavery, uttered sentiments obnoxious to that gentleman. Some of his friends instituted a suit against Mr. R. This suit has recently terminated, and the result is a decree of the Lords of Council and Session in favor of Mr. Campbell for two thousand pounds sterling.

[Allison says that he knows of no country where law and justice is better administered than in Scotland. The above verdict in favor of an American, and in such a case, considering the prejudice in that country against all who are apologists for the institution of slavery in this country, goes far to prove the veracity of the historian mentioned above.

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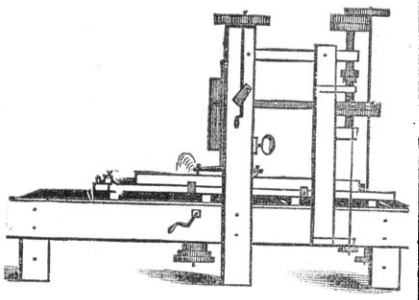

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We invite all to contribute in every department of industry which can in any way promote the comfort, convenience or improvement of mankind. We respectfully solicit the aid of Mechanics, Manufacturers, and Artists. Let them bring forward the products of the Loom and the Forge. All kinds of Machinery; every description of Tool and Implement. Articles of Wood, Stone, Metal, Glass, Leather, Wool, Cotton, Silk, Hemp and Flax, specimens of Printing, Statuary, Painting, Daguerreo ypes, Engraving and Lithography. Articles of female ingenuity and taste will have a prominent place in the Exhibition.

The Annual Exhibition of the Essex Agricultural Society, and the Essex Institute, will take place in Salem during the week of our Fair We trust that the Manufacturers of Agricultural Implements will bear this in mind, that we may have a good display of articles in this department. The Superintendent of the Fair will be entrusted with the care and management of every article sent for exhibition, and every facility will be given to show its useful purpose, its ingenious contrivance. Care will be taken to preserve them from injury; trustworthy men will be in attendance day and night; but all articles will be at the risk of the owners. Each contributor will be entitled to admission. Contributors are particularly and earnestly requested to send forward their goods in season. Articles intended for exhibition, will be received from the 1st to the 22d Sept. A check will be given for each article received, which must be presented when they are returned.

All Goods, Machinery, etc., intended for exhibition will be transported over the Railroads leading into the city, free of expense.

Medals of silver, and Diplomas, will be awarded according to the merit of the articles exhibited.—Strict justice shall be adjudged to every contributor. Impartial men, possessing intelligence, and competent knowledge in each department of art, will be selected as judges; those only will be appointed who are not competitors for premiums.

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NOTICE.

☞ The Second Exhibition of the Maryland Institute for the Mechanic Arts, will be held at Washington Hall, in the City of Baltimore, from Thursday, 27th of September. to 13th October, inclusive. Machines, models, or goods sent to the address of H. Hazelhurst, Corresponding Secretary of the Institute, (expense paid) will be met with immediate attention, and every facility used to exhibit the same to the best advantage. j16 4m

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Johnson's Improved Shingle Machine.

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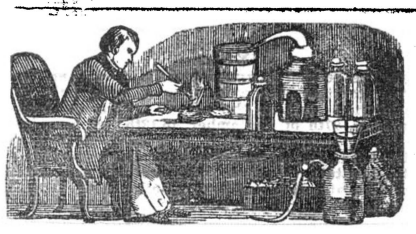


Terrestrial Magnetism.

Not many yeas ago, magnetism was generally allowed to be that kind of attraction exhibited by the magnetic needle, but it has been discovered (as suggested by Euler long ago) that it is a propetty inherent in *all* matter—the active principle in the mineral kingdom ; and it has a most important influence in the general economy of nature. The relations between chemistry and electro-magnetism, between animal and vegetable phsiology, are becoming every day more apparent; geology, while explaining the structure and the entombed organic remains of our planet, finds itself dependent on this great natural agent, working in obedience to a fixed law.

From time immemorial the loadstone has been known. and many a superstitious story has been related about loadstone rocks in the bottom of the ocean, dragging down vessels to their magnetic embrace. The loadstone points north and south, and it does this when freely suspended, whether, it be large or small. As all our primary rocks are more or less magnetic, it follows that, were it possible to lift the crystalline film of any given area, and make it to float, and left undisturbed, it woul eventually occupy (like the loadstone) precisely the same position, end for end, as it did before it was removed; its polar grain would return to its natural meridional bearing, the same as the loadstone or magnetic needle. Many have recently embraced the opinion that the earth is a great magnet and that electric currents are in continual circulation, entering in at the north, and emerging again from the south end of its axis, and that these currents are the decomposing, and recomposing causes of all terrestrial phenomenon "the active agents in the business of the world, and main supports of vegetable and animal life, and are still susceptible of running again and again the same round, as circumstances may determine."

Some attributes to their agency, an unfixedness of the dry land and sea, subject to perpetual movements, and that the land, as well as the ocean currents, is continully advancing with an undulatory movement *towards the North*, and that the magnetic tension causes those splits and fissures in the crystalline rocks, which, becoming filled with the deposites of metallic solutions, are called mineral lodes or veins.

Among the facts referred to in proof of this northern movement of the earth's surface, all the recent surveys and astronomical observations made in South America, show a northerly increase in latitude. The procession of the equinoxes, arises from the same northern advance of the land, which at present is also just 19 seconds per annum; and this change in the lapse of a moderate number of years destroys the arrangement of the catalogue of the stars and makes it necessary to reconstruct them.

It said by the advocates of this theory that the Egyptian priests acquainted Herodotus that, from the commencement of the dynasty of their kings (11,000 years,) the sun had apparently changed in the heavens four times; and that within the limits of historic record, the climate of Europe has been growing colder, and the inhabitants of the north are setting antipodically south. They assert, that the first settlers in Iceland found extensive districts of that now dreary country, covered with extensive forests of birch and fir; barley and other grain was also cultivated, while the whole island is now a dreary desert. They resort to the old tradition of Vinland, and say that Newfoundland, in the 14th century, had trees loaded with delicious fruits; the temperature mild and soil fertile. Among the fruits were grapes, from which arose the title "the land of wine."

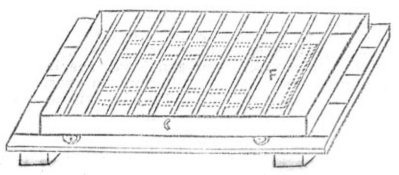
Wine they say, was formerly made from grapes which grew in the open fields of England, and north of France; and there are ample proof of a similar reduction of mean temperature in other parts of the continents of Europe and America.

History however, contradicts this, in England, the winters' used to be more cold than they are at present, and it is well known that the Tiber at Rome, used to be frozen over during "the brave days of old. The American winters, in the memory of persons now living, used to be far more severe, than they are at the present day. But to counterbalance this, in high northern latitudes, the remains of tropical plants and tropical animals, are being exhumed every day. A fossil elephant has just been discovered in Vermont, and the remains of the rhinoceros, hippopotamus, hyæna, lion, tiger, crocodile, and others, now only found in tropical climes, are strewed over the fields of Europe,

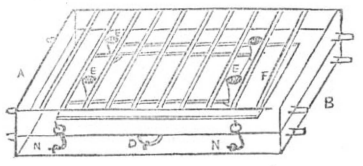
Iron Moulding.

Continued from page 392.

To mould a piece of light flat moulding such as the piece in this engraving, forming part of a grate. A box is selected to receive the pattern and have a few inches to spare, to surround the pattern completely with the sand. The pattern is then laid down either on the surface of a bed of sand, prepared in the upper box when inverted, or on a flat board so large as to support all its parts. The pattern is laid upon its back and then a layer of firm sand is laid over it, about an inch deep. The drag box is then placed in its proper position above the board as represented in the annexed figure showing the pattern F, inside.



The fine sand is spread before laying down the box. A larger quantity of sand is then passed through a seive, and an additional quantity of common sand is thrown in with a shovel and the whole rammed down even and flat with the rammer. The box is then filled up with sand, and rammed down with the round faced instrument seen in our last. When the sand is properly set and squared, flush with the box on top, the whole is turned over with great care,—all shocks avoided, and then the top box is bedded undermost in the ground. The box or board that was undermost is then lifted off. The upper surface of sand in the box, and the patterns are smoothed by a trowel, and the surface of the sand is made flush with that of the pattern all round. This forms the parting in the two boxes and in order to support them properly afterwards, dry sea sand is sprinkled over the parting surface. The box A, in the engraving, is laid upon the other and fastened by the hooks, N, N. Preparation is now made for gits or passages E, E, for the iron into the mould. More or less gits are made for castings according to the nature of the object to be cast. The quicker it cools and solidifies, the more gits are required. To provide for the gits, 4 taper pins of wood are stuck in the sand of the lower box at a short distance from the pattern projecting upwards, between the ribs of the upper box, sand is then filled in to cover the flat side of the pattern, and it is rammed in till the box is filled flush. The pins are then withdrawn and the holes formed by them are widened bell mouth fashion, and smoothed very nicely to keep the metal from carrying down any loose sand. The upper box is then taken off carefully, to preserve the impression of the upper side of the pattern; and the edges of the moulding in the box B, are then made wet with a swab to make the sand firm at the corners, and prevent crumbling on the withdrawal of the pattern. To do this, the pattern is loosened before it is drawn, if of iron, by gently tapping it laterally and downwards. The pattern is then drawn slowly out of the sand. It very often happens that in this operation, even with the greatest care exercised, that the moulding is broken. The repairing of this requires great skill and practice. The most prominent parts of the moulding are generally treated with a touch of the swab, applied very gently. This is a very important part of the business. After this the blackening (fine coal dust) is applied to the mould. If the face of the mould be first dusted with meal made of pease, and the coal dust applied afterwards and smoothed finely down, a smoother and finer surface is the result; other meal may be used as a substitute, but this is allowed to be the best. Having finished the moulding and got it in order for the reception of the iron, the upper box A, is again placed on the lower one joined by the hooks and pin D, and all is ready as seen in this engraving, to receive the molten metal.



In ramming the sand in moist or green sand moulding, care must be taken not to ram it too tightly, especially for large castings, because the air will not escape and the sand is often broken, and bad castings made from this very cause. The sand must, on the other hand, not be too loosely rammed, or the iron by its weight, will press it out from the mould, and thus make an uneven surface. The sand must have a certain degree of moisture in it to make a good casting, but if there is too much, the iron by the sudden formation of steam and vapor, may be expelled at the gits of the mould, or the bubbles of the vapor may form cavities on the under side of the casting. In cases of large castings, if the air does not find a ready vent there is danger of an explosion. This then is a very particular art. Care must be exercised not to put too much coal dust on the surface of the mould, or too much gas may be generated, which will form indents in the casting There must be no loose blacking left on the pattern. The pattern must be perfectly dry when laid down, if it is the least damp, the blacking will stick to it, and destroy the moulding. It must not be in the sand too long, for fear that it may obsorb damp, and swabbing the mould should always be avoided if possible. The object of forming the gits at the side of the moulding is to introduce the metal regularly, and the iron must be run in as fast as possible, especially for light, flat and hollow moulding, and according to the thinness of the casting, there must be the greater number of gits to insure the mould to be rapidly filled up while the metal is in a liquid state.

A Curious Grass.

In the pastures of Hungary, there is a genus of grass called Stiper, the seeds of which when carried about by the wind, make a lodgment on the back of sheep, and work their way through the wool, and skin, and flesh, into the intestines, and excite throughout the system a powerful morbific action, which the veterinarians of the country call the *stipoe moxa*, and which shows itself in restlessness, sleeplessness, and loss of appetite, and terminates in fever, inflammation, and death.

Great Hungarian Gathering.

A most extraordinary large meeting was held in the City Hall Park, of this City on the afternoon of last Monday. A great number of eloquent speeches were made, and Genl. Avvezzanie recently of Rome, was among the number of those who were there, and received the plaudits of the assembled multitude. The people of America deeply sympathise with those of Hungary in their present struggle for national rights, against the might of Austria on one hand and the Russian Bear on the other.

LITERARY NOTICES.

"Holden," for September, is as usual good, and is undoubtedly the cheapest Magazine published in America. It has already attained a very large circulation, but it should not be less than 100,000 at the price at which it is furnished. This number contains a likeness of Dr. Sharp, of Boston, an eminent divine; also, "The first grave of Napoleon," in Kane's Valley. It has a very well written article upon Ærial Navigation, by F. Saunders; finally, it is good throughout. Terms, $1 per year. C. W. Holden, Publisher.

Graham's Magazine, for September, has been sent us by the politeness of W. H. Graham, Brick Church, this city. It abounds in good matter and spirited engravings; the principal of which, "No rose without the Thorn," is well done. This Magazine is highly popular, wherever it is known, and cannot but prove a cheerful companion to every lady of good sense. We commend it to our friends as a publication of more than ordinary merit.

The Scalpel.

This is the title of one of the most sterling and able journals in this country, and deserves a place in every family, for its practical instructions in regard to the various diseases to which the human constitution is heir. Dr. Dixon is a well known and vigorous writer and does not appear before the public unlearned in the medical profession. Published quarterly at $1 per annum. New York.

The Western Journal.

This valuable monthly Magazine, published by Tarver & Fisk, St. Louis, Mo., we are happy to welcome again to our sanctum. It has been three months suspended on account of the printing establishment being destroyed by the great fire.

The "Teacher's Advocate," published at No. 9 Nassau street, this city, is a valuable and useful periodical.

NEW PROSPECTUS

OF THE

SCIENTIFIC AMERICAN !

TO INVENTORS, MECHANICS AND ARTIZANS.

The Publishers of the SCIENTIFIC AMERICAN in returning their thanks to the community for the liberal support and encouragement which has been extended to them during the past four years, would respectfully give notice that the 1st number of Volumn 5, will be issued on the 22d of September, affording a favorable opportunity for all to subscribe, who may wish to avail themselves of the valuable information always found in its columns. The new volume will be commenced with new type, printed on extra fine paper, manufactured expressly for this publication, and embelished with a chaste and elegant border. It will be published as heretofore in quarto form, thus affording, at the end of the year, a BEAUTIFUL BOOK of OVER 400 PAGES, containing between 5 and 600 ORIGINAL ENGRAVINGS of NEW INVENTIONS, described by letters of reference, besides a great amount of reading matter, valuable to every man in the country,

An increased amount of care and expense will be bestowed upon this Volume, to render it more fully what it has been termed, "The best Mechanical Paper in the World." Its columns, as usual, will be filled with the most reliable and correct information in regard to the progress of SCIENTIFIC and MECHANICAL Improvements, CHEMISTRY, ARCHITECTURE, BOTANY, MANUFACTURES, RAIL ROAD Intelligence, and the WEEKLY LIST OF PATENTS, prepared expressly for this Journal at the Patent Office, Washington.

As an evidence of the estimation in which this publication is held by the Scientific and Mechanical portion of the community, it is only only necessary to state, that its circulation has increased within the last three years to upwards of 10,000 copies, already exceeding the united circulation of all the Mechanical and Scientific publications in this country, and the largest of any single one in the world.

The information obtained from the Scientific American can always be relied upon as being correct: and we shall, as usual, aim to elevate the interests of our industrious mechanics, and also to assist them in their labors, by sound advice and practical instruction.

TERMS :—Two dollars a year in advance; or, if desired, one dollar in advance, and the remainder in six months.

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N. B —Subscribers will bear in mind that we employ no Agents to travel on our account; a list of our local agents will be found in another column—all of whom are duly authorized to act as such, and none other.

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